SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS2491 REV. E

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Superseding AMS2491D

(R) Surface Treatment of Polytetrafluoroethylene (PTFE) Preparation for Bonding

RATIONALE

This specification has been revised to explicitly allow the variations in color typically resulting from this surface treatment process. Acceptance test sampling has been defined and numerous editorial changes have been made.

1. SCOPE

1.1 Purpose

This specification covers the engineering requirements for preparing surfaces of polytetrafluoroethylene (PTFE) for bonding and the properties resulting from the treatment.

1.2 Application

This process has been used typically for rendering surfaces of parts capable of supporting a high strength adhesive bond. The bonding preparation can affect the electrical properties of the PTFE and this should be considered before using it for treatment of electronic components.

1.3 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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http://www.sae.org/technical/standards/AMS2491E

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS3690 Adhesive Compound, Epoxy, Room Temperature Curing

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org

ASTM D 897 Tensile Properties of Adhesive Bonds
ASTM D 1002 Apparent Shear Strength of Single Lap Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal to Metal)

2.3 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, http://assist.daps.dla.mil/quicksearch/.

FED-STD-313 Material Safety Data, Transportation Data, and Disposal Data for Hazardous Materials Furnished to Government Activities

3. TECHNICAL REQUIREMENTS

3.1 Material

The surface treating agent shall be a solution of sodium or other alkali metal in anhydrous liquid ammonia or tetrahydrofuran-naphthalene or other suitable solvent.

3.1.1 Safety Precaution

Sodium metal reacts violently with water. Tetrahydrofuran solvent is highly flammable. Therefore, it is recommended that personnel performing the etching process and handling these materials should be trained and experienced in their use. Preparation of the surface activation solution must be carried out in a properly vented area.

3.2 Preparation

Parts to be treated shall be cleaned free from dirt, grease, oil, and other contamination. Cleaned parts shall be thoroughly dried prior to surface treatment.

3.3 Procedure

The clean, dry parts shall be exposed to the surface treating agent until all surfaces to be bonded meet the color requirements of 3.5.1.

3.4 Post-Treatment

The treated parts shall be cleaned and thoroughly dried. A suitable cleaning technique involves immersion of parts in acetone, a water rinse, followed by a final rinse with clean, anhydrous acetone.

3.4.1 Treated parts which are not to be bonded immediately shall be packaged in heat-sealed polyethylene bags in a manner which will prevent exposure to ultraviolet light and surface contamination.